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ABSTRACT

This document consists of a sample curriculum model for Kindergarten mathematics based on the 1998 Arkansas State Mathematics Framework. The model is divided into five sections: (1) Number Sense, Properties, and Operations; (2) Geometry and Spatial Sense; (3) Measurement; (4) Data Analysis, Statistics, and Probability; and (5) Patterns, Algebra, and Function. Within each section, the standards are exemplified and articulated by benchmarks, suggested assessments, and possible strategies and activities for teaching the standard. Blackline master checklists are included as appendices. (MM)

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SAMPLE CURRICULUM MODEL

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1

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GRADE K

based on the 1998 Arkansas State Mathematics Framework
Arkansas Department of Education, 1998

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Grade Level_K_

NUMBER SENSE, PROPERTIES, AND OPERATIONS

Standard NPO.1.0	Benchmarks	Assessments	Strategies/Activities
SLE NPO.1.1 Demonstrate number sense (concepts of counting, grouping, and place value) using manipulatives.	Students will construct sets to represent numbers using manipulatives. Students will count forward from 1-31 and backward from 10 by ones through one to one correspondence. Students will count from 1 to 10 by twos and to 50 by fives and tens.	. Teacher observation . Peer and self evaluation . Anecdotal records . State-wide tests . Perform-ance	. Use concrete objects to represent numbers. (Ex. Students use buttons to show how many is ten.) . Students celebrate the 100th day of school by bringing 100 of some item from home. . Count the days of a month that contains 31 days, such as October. . Count down from 10 to get motivated for a special activity. . Count a set of 10 objects taking 2 at a time. . Whole class, as a chorus, count to 50 by fives and tens. . Count number of steps needed to move from one place in the classroom to another place in the classroom. . Participate in counting songs and rhymes. . Read: How Many Snails? by Giganti, Paul, Jr.; Anno's Counting Book by Anno, Mitsumasa; Who's Counting by Tafuri, Nancy; Ten Black Dots by Crews, Donald; There Were Ten in the Bed by Adams, Pam; One Woolly Wombat by Argent and Trinca; Ten, Nine, Eight by Bang, Molly.
SLE NPO.1.2 Develop meaning for the operations by modeling and	Students will use manipulatives to add and subtract to ten, and will orally give an	. Appro-priate response to teacher direct questions	. Use concrete objects to represent numbers. Combine the objects (or remove some of the

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discussing a variety of problem situations.	example of a problem situation involving basic addition and subtraction.	. Verbal explanation . Teacher observation . Peer and self evaluation . Improved vocabulary . Demon-stration	objects) to form a new set. Count the number of objects in the new set and determine if addition or subtraction was represented. An example of a problem situation involving similar procedures is then orally communicated. (Also NPO.1.4)

Grade Level_K_
NUMBER SENSE, PROPERTIES, AND OPERATIONS

Standard NPO.1.0	Benchmarks	Assessments	Strategies/Activities
SLE NPO.1.3 Apply and master counting, grouping, place value, and estimation.	Students will apply and master counting forward from 1-31 and backward from 10 by 1's through one to one correspondence. Students will apply and master counting from 1 to 10 by twos; and to 50 by fives and tens. Students will estimate the number of objects in a set of less than 50 items.	. Teacher observation . Peer and self evaluation . Anecdotal records . Checklist . Statewide tests . Performance	. See NPO.1.1 . Students estimate the number of items in a guessing jar.
SLE NPO.1.4 Solve problems using terminology and symbols of operations (e.g., add, subtract, multiply, and divide).	Students will learn the meaning of the operations (addition and subtraction) will determine the operation (addition or subtraction) of a problem solving situation, and will communicate the determined operation orally.	. Appropriate response to teacher direct questions . Verbal explanation . Teacher observation . Peer and self evaluation . Anecdotal record	. See NPO.1.2 . Students work in pairs to identify symbols on flash cards.

Grade Level K

NUMBER SENSE, PROPERTIES, AND OPERATIONS

Standard NPO.1.0	Benchmarks	Assessments	Strategies/Activities
SLE NPO.1.5 Demonstrate competency of operations (e.g. add, subtract, multiply, and divide) using mental math and technology.	Students will demonstrate the concept of addition and subtraction with technology.	. Teacher observation . Peer and self evaluation . State-wide tests	. Explore addition and subtraction using calculators. . Set up a computer center with appropriate software for student use. (Ex. Millie's Math House by Edmark.
SLE NPO.1.6 Use manipulatives to demonstrate and compare rational numbers/fractions (e.g., find simple parts of a whole).	Students will use manipulative to demonstrate the concept of the fraction ½ as one of two equal parts of a region or object, and will find ½ of a set with an even number of concrete objects.	. Appro-priate response to teacher direct questions . Verbal explanation . Teacher observation . Peer and self evaluation . Anecdo-tal records . State-wide test . Demon-stration	. Read: The Very Hungry Caterpillar by Carle, Eric; Fractions are Part of Things by Dennis, J. Richard; Pezzettino by Lionni, Leo. . Students are given a snack cake and a plastic knife. With a partner, they determine where to cut the cake so that each get the same amount. The concept of the fraction ½ is then related to them as each receiving one of two equal parts. The students are then asked to display 10 items. They are to distribute the ten items equally among two containers and orally state that each container contains ½ of the ten items.

Grade Level K

NUMBER SENSE, PROPERTIES, AND OPERATIONS

Standard NPO.1.0	Benchmarks	Assessments	Strategies/Activities
SLE NPO.1.7 Communicate understanding of number sense, properties, and operations through journal writing, creating problems, constructing mathematical sentences, etc..	Students will concretely, pictorially, and orally demonstrate number sense (one to one correspondence, skip counting, grouping, etc.).	. Teacher observation . Peer and self evaluation . Anecdotal records . Verbal explanation . Dictation . Appropriate response to teacher directed questions . Improved vocabulary . Statewide tests	. See NPO.1.1, NPO.1.2, NPO.1.3, NPO.1.4, NPO.1.5, NPO.1.6 . Students dictate a math story using correct number sense.

Grade Level_K_

NUMBER SENSE, PROPERTIES, AND OPERATIONS

Standard NPO.2.0	Benchmarks	Assessments	Strategies/Activities
SLE NPO.2.1 Represent numbers and operations (addition, subtraction, multiplication, and division) in a variety of forms using manipulatives, symbols, and graphs (pictographs, etc.).	Students will represent numbers and operations (addition and subtraction to ten) in a variety of forms using manipulatives and graphs.	. Teacher observation . Peer and self evaluation . Appropriate response to teacher directed questions . Statewide test . Demonstration	. See NPO.1.0 . Students make a pictograph of the number of students with buttons on their clothes, the number of students with snaps on their clothes, the number of students with zippers on their clothes by attaching a button, snap, or zipper, for each student with those attributes, on a piece of poster board. The students then add or subtract combinations of any two items.
SLE NPO.2.2 Apply elementary number theory (skip counting, patterns, number series, odd and even numbers, multiples, fractions, etc.).	Students will apply elementary number theory (skip counting, patterns, sets, etc.).	. Appropriate response to teacher direct questions . Verbal explanation . Teacher observation . Peer and self evaluation . Improved vocabulary . Statewide test . Teacher-made test . Performance	. See NPO.1.1 and NPO.1.3 . Students will count the number of students in the class by two's in order to determine the number of napkins needed for the snack table. . Students will complete the pattern for lining up at the door to exit the room. (Ex. Girl, boy, birl, boy, etc.)

Grade Level K

NUMBER SENSE, PROPERTIES, AND OPERATIONS

Standard NPO.2.0	Benchmarks	Assessments	Strategies/Activities
SLE NPO.2.3 Apply computation (add, subtract, multiply, and divide) and estimation to real-world problems.	Students will apply estimation to real-world problems.	. Teacher observation . Peer and self evaluation . Anecdotal records . State-wide test	. Read How Tall was Milton? By Lowery, Lawrence F. . Students estimate how many paper clips tall they are. They then link the clips together to check the accuracy of their estimate. . Students guess the number of items in a guessing jar.
SLE NPO.2.4 Use mental math, manipulatives, and technology to solve problems.	Students will use manipulatives to solve problems.	. Appropriate response to teacher direct questions . Verbal explanation . Teacher observation . Peer and self evaluation . State-wide test	. See NPO.1.1. NPO.1.2 NPO.1.4, NPO.1.6, NPO.2.1 . Students are given half the number of cream filled cakes that are needed for the class. They are to determine how each student will get an equal amount of food.

Grade Level K

NUMBER SENSE, PROPERTIES, AND OPERATIONS

Standard NPO.2.0	Benchmarks	Assessments	Strategies/Activities
SLE NPO.2.5 Describe and compare quantities by using concrete and real-world models of fractions.	Students will describe and compare quantities by using concrete and real-world models of the fraction ½ and a whole.	. Teacher observation . Peer and self evaluation . Anecdotal records . Verbal explanation . Appropriate response to teacher directed questions . Improved vocabulary . Statewide tests . Demonstration . Exhibition	. See NPO.1.6

Grade Level K

GEOMETRY AND SPATIAL SENSE

Standard GS.1.0	Benchmarks	Assessments	Strategies/Activities
SLE GS.1.1 Sort, classify, and construct geometric shapes/figures and objects using a variety of manipulatives.	Students will sort geometric shapes/figures and objects using a variety of manipulatives.	. Teacher observation . Peer and self evaluation . State-wide test . Demon-stration	. Read: The Secret Birthday Message by Carle, Eric; Shapes by Reiss, John, Jr. . Students are provided geometric shapes and are told to sort them and explain their reasoning.
SLE GS.1.2 Describe, model, draw, construct, compare and classify shapes in one, two, and three dimensions.	Students will construct, model, and compare shapes in two-dimensions. Students will describe three-dimensional shapes using two-dimensional shapes (squares, triangles, circles, etc.). Students will identify lines in the real world.	. Appro-priate response to teacher direct questions . Verbal explanation . Teacher observation . Peer and self evaluation . Improved vocabulary . State-wide test . Demon-stration	. Students use modeling clay to form the various geometric shapes (circle, rectangle, triangle, square, rectangular solid/box, pyramid, sphere/ball) . Students will name examples of lines in the school. (Ex. Lines of students in the hallway, lines on notebook paper, etc.)

2rade Level K

GEOMETRY AND SPATIAL SENSE

Standard GS.1.0	Benchmarks	Assessments	Strategies/Activities
SLE GS.1.3 Determine the relationship between shapes/figures using congruence and similarity, and using transformations (flips, slides, and rotations).	Students will develop the concept of likenesses and differences with regular and irregular shapes. Students will manipulate familiar objects through slides, flips, and turns.	. Teacher observation . Peer and self evaluation . Portfolio . State-wide test . Demon-stration	. Extend GS.1.1 to include non-geometric shapes (stars, clouds, etc.) and have the students sort according to similarity and then according to congruence (same size and shape). . Students are provided foam cut-outs of geometric shapes/figures, paints, and paper. They will create a picture using the foam cut-outs and the paint. Students are encouraged to slide, flip, and turn their shape as they paint. The dried paintings will be placed in their portfolios.
SLE GS.1.4 Predict and determine the results of combining, dividing, and subdividing shapes/figures.	Students will combine shapes/figures.	. Teacher observation . Peer and self evaluation . State-wide test . Project	. Students will form pictures using attribute blocks (multi-colored blocks cut in various geometric shapes). . Students are given cut-outs of various geometric shapes and are asked to glue the shapes to a sheet of paper in the form of a picture. . Read: The Very Busy Spider by Carle, Eric (focus on spatial and textural patterns).

Grade Level K

GEOMETRY AND SPATIAL SENSE

Standard GS.1.0	Benchmarks	Assessments	Strategies/Activities
SLE GS.1.5 Demonstrate spatial awareness (positional relationship, size, direction, area, volume, etc.).	Students will demonstrate spatial awareness (positional relationship such as closed/open, over/under, above/below, right/left, top/bottom, size, etc.).	. Appropriate response to teacher direct questions . Verbal explanation . Teacher observation . Peer and self evaluation . State-wide test . Demonstration	. Students are shown pictures of two geometric shapes arranged in different positions and are asked to describe the positional relationship of them. (Ex. A picture of a triangle to the left of a square is shown. The students state that the triangle is on the left or the square is on the right or the triangle is beside the square, etc.). . Read: Changes, Changes by Hutchins, Pat.
SLE GS.1.6 Use manipulatives and technology to demonstrate geometric concepts (positional relationship, size, direction, area, volume, etc.).	Students will use manipulatives to demonstrate geometric concepts (positional relationship, size, etc.).	. Teacher observation . Peer and self evaluation . Anecdotal records . Checklist . State-wide test . Teacher-made test . Demonstration	. See GS.1.5 . Students will follow teacher's directions in the manipulation of geometric shapes. Teacher's directions will consist of arranging the shapes in specified positions. (Ex. Place a triangle below a circle or place a small circle on a large circle, etc.).

Grade Level K

GEOMETRY AND SPATIAL SENSE

Standard GS.1.0	Benchmarks	Assessments	Strategies/Activities
SLE GS.1.7 Demonstrate geometric and spatial sense through written and oral communication (e.g., draw and describe a color cube model using isometric dot paper).	**Students will orally describe three-dimensional objects in terms of two-dimensional shapes.**	. Appropriate response to teacher direct questions . Verbal explanation . Teacher observation . Peer and self evaluation . Improved vocabulary . State-wide test	. See GS.1.3, GS.1.4, GS.1.5, GS.1.6. Have students verbalize responses to teacher's questions.

Grade Level K

GEOMETRY AND SPATIAL SENSE

Standard GS.2.0	Benchmarks	Assessments	Strategies/Activities
SLE GS.2.1 Estimate and measure the size of geometric figures/shapes in the real world (length, width, perimeter, area, volume, etc.).	Students will develop the concept of the size (length and width) of geometric figures/shapes in the real world using non-standard units.	. Teacher observation . Peer and self evaluation . Anecdotal records . State-wide test . Performance	. Identify various objects in the classroom that represent geometric shapes and determine their size (length and width) using non-standard units of measure. (Ex. A bottom of a box of tissue represents a rectangle or square. The students measure the width and length using a plastic chain too determine how many links long or wide the bottom of the box is.)
SLE GS.2.2 Construct and explain geometric patterns using concrete and pictorial models with one or more attributes (color, shape, size, etc.).	Students will replicate and explain geometric patterns using concrete models, with one attribute.	. Appropriate response to teacher direct questions . Verbal explanation . Teacher observation . Peer and self evaluation . Improved vocabulary . State-wide test . Demonstration . Project	. Students are given a created pattern of six triangles of two different colors. They are told to replicate the pattern using their triangles and explain the pattern. (May also use two different shapes of the same color.)

Grade Level K

GEOMETRY AND SPATIAL SENSE

Standard GS.2.0	Benchmarks	Assessments	Strategies/Activities
SLE GS.2.3 Use manipulatives and technology to solve problems involving perimeter, area, volume, etc.	Students will use manipulatives to solve problems involving perimeter and area.	. Teacher observation . Peer and self evaluation . Anecdotal records . Statewide test . Performance	. Students are given colored tiles and pieces of various-sized, rectangular paper. They are to cover a sheet of the rectangular paper with the colored tiles so that no tiles are overlapping and no space is between the tiles. The tiles do not need to hang over the paper. They are to count the tiles to determine the area of each sheet of paper. They are to line the tiles around the outside of the paper like a picture frame and count the tiles to determine the perimeter of each sheet of paper.
SLE GS.2.4 Illustrate geometric concepts through written and oral communication. (For example, "I am a rectangular house. My windows are squares. My door is a rectangle. My roof is a triangle.")	Students will orally describe three-dimensional objects in terms of two-dimensional shapes as represented in real life.	. Appropriate response to teacher direct questions . Verbal explanation . Teacher observation . Peer and self evaluation . Improved vocabulary . Statewide test	. See GS.2.1, GS.2.2, and GS.2.3. Students will verbalize their answers to the teacher's questions.

Grade Level K

MEASUREMENT

Standard M.1.0	Benchmarks	Assessments	Strategies/Activities
SLE M.1.1 Demonstrate and apply the concept of comparison (large, small, long, short, etc.) according to given attributes (length, capacity, weight, mass, etc.).	Students will demonstrate the concept of comparison (more/less, larger/smaller, shorter/longer, heavier/lighter, etc.) according to a given attribute (shape, size, etc.).	. Teacher observation . Peer and self evaluation . Anecdotal records . Appropriate response to teacher direct questions . Verbal explanation . Improved vocabulary . Statewide test	. Read: The Wuggie Norple Story by Pinkwater, Daniel. . Display two objects and have the students compare them. (Ex. A child's boot and a man's boot) . Display pictures of two objects and have the students compare them. . Teacher displays two objects and asks "Which one is...?"
SLE M.1.2 Select, demonstrate, and defend the use of appropriate units of measure.	Students will select, demonstrate, and use the appropriate units of measure for length (non-standard units).	. Teacher observation . Peer and self evaluation . Verbal explanation . Appropriate response to teacher direct questions . Improved vocabulary . Anecdotal records . Statewide test . Teacher-made test	. Students will choose and use the appropriate unit of measure in order to measure various parts of their bodies. . Students will choose and use the appropriate unit of measure to determine the distance to various places in the classroom.

Grade Level K

MEASUREMENT

Standard M.1.0	Benchmarks	Assessments	Strategies/Activities
SLE M.1.3 Convert from one measurement to another within the same system (feet to yards, centimeters to meters, etc.).	N/A		

Grade Level K
MEASUREMENT

Standard M.2.0	Benchmarks	Assessments	Strategies/Activities
SLE M.2.1 Select and use appropriate standard (inches, feet), non-standard (paper clip, thumbnail), and metric (centimeter, meter) measuring instruments (e.g., rulers, scales, measuring tape, yard stick, meter stick thermometer, etc.).	**Students will use a variety of objects to measure length, weight, and capacity.**	. Teacher observation . Peer and self evaluation . State-wide test . Demon-stration . Checklist . Teacher-made test	. Students will measure the length of various items using snap-together cubes. They will then count the cubes to determine the length. . Students will use a primer balance and cubes to measure the weight of various items. They will then count the cubes to determine the weight of the item. . Students will fill various items with cubes or marbles, etc., then they will count the cubes to determine the capacity of the item.

Grade Level K

MEASUREMENT

Standard M.3.0	Benchmarks	Assessments	Strategies/Activities
SLE M.3.1 Estimate and measure quantities such as weight, length, area, volume, money, time, and temperature.	Students will estimate and measure in non-standard units weight, length, and capacity. Students will identify individual coins and one-dollar bill and identify the dollar sign and cent sign.	. Teacher observation . Peer and self evaluation . Anecdotal records . Checklist . Appropriate response to teacher direct questions . Verbal explanation . Improved vocabulary . State-wide test . Demonstration	. Extend M.2.1 by having students estimate the weight , length, and capacity of items and then actually measure them for accuracy. . Read: Alexander, Who Used to be Rich Last Sunday by Viorst, Judith. . See NPO.1.4 (Flash cards include pictures of each coin and the one-dollar bill.)
SLE M.3.2 Solve problems using measuring instruments and technology.	Students will discuss and solve problems using non-standard measuring instruments.	. Appropriate response to teacher direct questions . Verbal explanation . Teacher observation . Peer and self evaluation . Improved vocabulary . State-wide test	. See M.2.1 (Students work with partners or in small groups)

Grade Level K
MEASUREMENT

Standard M.3.0	Benchmarks	Assessments	Strategies/Activities
SLE M.3.3 Pose problems using customary (inches, feet, etc.), non-standard (paper clip, thumbnail, etc.), and metric (centimeters, meters, etc.) measurements in real-world situations.	**Students will orally pose problems using non-standard measurements in real-world situations.**	. Teacher observation . Peer and self evaluation . Dictation . Portfolio . Appro-priate response to teacher direct questions . Verbal explanation . Improved vocabulary . State-wide test . Project	. Extend M.3.1 by having students dictate a problem in a real-world situation that could be solved using non-standard units of measure. (Ex. Adrian needs to store the left over marshmallows in a bowl, but she doesn't know which of two bowls to use, so she puts items that are approximately the same size as the marshmallows in each bowl to determine which bowl to use.) The dictated problem will then go into the student's portfolio.

Grade Level K

DATA ANALYSIS, STATISTICS AND PROBABILITY

Standard DSP.1.0	Benchmarks	Assessments	Strategies/Activities
SLE DSP.1.1 Utilize the scientific method for data analysis. A. Identify the purpose (problem statement) for data collection. B. Make a prediction about the final results of data collected. C. Collect and organize data (tables, graphs, etc.). D. Analyze and interpret data (prediction, inference, conclusion, etc.). E. Display data using appropriate bar graphs, tables, pie graphs, etc., with and without technology.	Students will identify the purpose (problem statement) for data collection (likenesses, differences, most, least, etc.). Students will make a prediction about the final results of data collection (alike, different, more, etc.) and analyze the data (biggest, smallest, least, most, etc.). Students will collect, organize, and display (both physically and pictorially) data in a variety of formats including bar graphs, Venn diagrams, etc.	. Teacher observation . Peer and self evaluation . Performance . Appropriate response to teacher direct questions . Verbal explanation . Improved vocabulary . Statewide test . Project	. See NPO.2.1 . Students identify the purpose for data collection (e.g., distribution of birthdays, favorite hobbies, etc.). They predict the final results of the data collection (e.g., more birthdays in November, least number of students like to clean their room as a hobby, etc.). They collect data (e.g., poll the students, count the items, etc.) and organize it (e.g. tally chart, groups of like concrete items, etc.). They display the data in a variety of formats (e.g. bar graph of birthdays, attaching concrete objects to a Venn diagram, etc.)
SLE DSP.1.2 Explain the results of data collection using oral and written communication.	Students will orally explain the results of data collection.	. Teacher observation . Statewide test . Performance . Peer and self evaluation . Appropriate response to teacher direct questions . Verbal explanation	. Extend DSP.1.1 to have students orally explain the results of the data collected.

		Improved vocabulary	

Grade Level K

DATA ANALYSIS, STATISTICS AND PROBABILITY

Standard DSP.2.0	Benchmarks	Assessment	Strategies/Activities
SLE DSP.2.1 Predict the results of data collection and demonstrate the concept of chance through the use of manipulatives. (For example: What is the probability of drawing one red marble from a bag of multicolored marbles?)	N/A		
SLE DSP.2.2 Record the results of data collection with a variety of formats that could include charts, graphs, tables, and technology, using oral and/or written communication.	Students will record the results of data collection with a variety of symbolic formats including bar graphs, Venn diagrams, etc. using oral communication.	. Teacher observation . State-wide test . Peer and self evaluation . Appro-priate response to teacher direct questions . Verbal explanation . Improved vocabulary . Exhibi-tion	. See DSP.1.2

Grade Level K

DATA ANALYSIS, STATISTICS AND PROBABILITY

Standard DSP.3.0	Benchmarks	Assessments	Strategies/Activities
SLE DSP.3.1 Predict results, analyze data, and find out why some results are more likely, less likely, or equally likely.	N/A		
SLE DSP.3.2 Make a true statement based on a simple concept of average (median, mean, mode, and range) for a small sample size.	Students will orally make a true statement based on the simple concepts of mode (occurs most often) and range (the smallest and largest).	. Teacher observation . State-wide test . Peer and self evaluation . Appro-priate response to teacher direct questions . Verbal explanation . Improved vocabulary	. Students will determine who is the smallest in stature and the largest in stature in the class. They will also determine who has about the same height and whose height is represented the most often.

Grade Level K

DATA ANALYSIS, STATISTICS AND PROBABILITY

Standard DSP.3.0	Benchmarks	Assessments	Strategies/Activities
SLE DSP.3.3 Use the tools of technology to assist in gathering, organizing, and presenting information.	Students will use the tools of technology to experience gathering, organizing, and presenting information.	. Teacher observation . Peer and self evaluation . Appropriate response to teacher direct questions . Verbal explanation . Improved vocabulary . Exhibition	. Students will use appropriate computer software such as Graphers by Sunburst. . Students will view appropriate videos.

Grade Level K

PATTERNS, ALGEBRA AND FUNCTION

Standard PAF.1.0	Benchmarks	Assessments	Strategies/Activities
SLE PAF.1.1 Sort and classify a wide variety of materials.	Students will sort a wide variety of materials using one attribute (color, shape, size, etc.).	. Teacher observation . Peer and self evaluation . State-wide test . Demon-stration . Checklist	. See GS.1.1 . Students will sort animal counters by color. . Students will sort learning materials and place them in their proper places.
SLE PAF.1.2 Describe, extend, and create a wide variety of patterns using concrete models.	Students will describe and extend (through motion, color, sound, position, shape, size, and quantity) repeating and growing patterns.	. Appro-priate response to teacher direct questions . Verbal explanation . Teacher observation . Peer and self evaluation . Improved vocabulary . State-wide test . Perform-ance . Checklist	. Students will imitate and continue a snap/clap pattern presented by teacher. . See NPO.2.2 . Students will determine teacher's pattern for passing out treats and will extend it to the remainder of the class. . Students will recognize the growing pattern for counting and skip counting. See NPO.1.3

Grade Level K

PATTERNS, ALGEBRA AND FUNCTION

Standard PAF.1.0	Benchmarks	Assessments	Strategies/Activities
SLE PAF.1.3 Demonstrate equality (=) and inequality (<, >) using manipulatives and symbols.	Students will compare sets represented with manipulatives using the terms greater than, less than, and equal to (no symbols at this level).	. Teacher observation . Peer and self evaluation . Appropriate response to teacher direct questions . Verbal explanation . Improved vocabulary . Statewide test . Demonstration	. Extend NS.1.1 by having students prepare two sets and compare them using the terms greater than, less than, or equal to. . Read: How Did Numbers Begin? By Sitomer, Mindel, and Harry Sitomer. Discuss comparison using the terms greater than, less than, and equal to.
SLE PAF.1.4 Demonstrate the beginning concept of a variable. (Use boxes, letters, or other symbols to stand for any number of object in simple situations, with or without concrete material, such as 6 + ___ = 8 or 3 + B = 4, etc.).	Students will orally furnish an answer for an unknown that will make a true mathematical statement. (e.g., The teacher asks, "What plus three makes four?")	. Appropriate response to teacher direct questions . Verbal explanation . Teacher observation . Peer and self evaluation . Improved vocabulary . Statewide test . Demonstration	. See PAF.1.2 and NPO.2.2 . Ex. Teacher asks, "How many blocks need to be added to these three blocks for you to have eight blocks?"

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Grade Level K

PATTERNS, ALGEBRA AND FUNCTION

Standard PAF.1.0	Benchmarks	Assessments	Strategies/Activities
SLE PAF.1.5 Express mathematical relationships in one and two dimensions. (Length x Width = Area, L x W = A, etc.)	N/A		
SLE PAF.1.6 Use oral and/or written communication to interpret created patterns.	Students will pictorially and orally communicate interpret created repeating and growing patterns.	. Teacher observation . Peer and self evaluation . Appro-priate response to teacher direct questions . Verbal explanation . Improved vocabulary . State-wide test . Perform-ance	. See PAF.1.2, PAF.1.3, and PA.1.4

Mathematics Checklist for Kindergarten

Student Name:			
COMPETENCIES	Introduced	Progressing	Proficient
Number Sense, Properties, and Operations			
Recognize numerals and number names; connect them to the quantities they represent			
Count and keep track of up to 20 items			
Create a set of a given size; represent quantities with drawings, numbers, and words			
Compare and order quantities and numbers to 20 (say which is more, most, less, least)			
Act out and retell stories that involve combining and separating (fact families)			
Use drawings, numbers, and words to record solutions to real-world problems involving combining and separating			
Solve problems with more than 1 solution			
Combine and separate quantities; add two single-digit numbers			
Identify, by estimating, a quantity close to 10			
Use manipulatives to demonstrate $\frac{1}{2}$ of a region and $\frac{1}{2}$ of a set			
Geometry and Spatial Sense			
Sort objects (pattern blocks, geoblocks, etc.) by attributes			
Describe similarities, differences, and relationships of objects (position, size, etc.)			
Recognize and describe 2- and 3-dimensional shapes			
Match a 3-dimensional block with a 2-dimensional outline of one of its faces			
Combine shapes to fill a space			
Identify, name, and draw circle, rectangle, triangle, hexagon, rhombus, trapezoid, and square			
Identify sphere, prism, pyramid, cone, and cylinder			
Measurement			
Compare objects based on length, height, and weight (longer, shorter, lighter, heavier)			
Measure with a non-standard unit (paper clip, strip of paper, etc.)			
Have a sense of time (days, weeks)			
Recognize calendar as a tool for keeping up with time			

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Mathematics Checklist for Kindergarten, Page 2

	Introduced	Progressing	Proficient
Data, Probability, and Statistics			
Collect data that falls into two groups; compare the groups			
Recognize one-to-one correspondence between the actual groups and the data			
Collect, record, and represent data; use calculator as a counter			
Organize the data in more than one way			
Explain results of data collection; record answers to questions about the data			
Patterns, Algebra, and Functions			
Represent a pattern using manipulatives and drawings; create a geometric pattern			
Recognize and describe a repeating, shrinking, or growing pattern			
Extend a pattern; predict what will occur next in a pattern			
Interpret a pattern using physical movements (clap, stomp, stomp, clap…)			
Make and describe repeating number sequence patterns			
Skip count by 2			

Comments:

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